California Monthly Climate Summary
December 2011

Weather Highlights

December 2011 will go down as one of the driest Decembers on record for California. According to the Western Region Climate Center's California Climate Tracker, the monthly average temperature was 40.5°F which is 1.3°F lower than the long-term average of 41.8°F. With a statewide average of 0.28 inches, precipitation in December was only 7% of average and was the second driest December in the 117 years of record. December 1989 was the only one drier. A copy of the California Climate Tracker Precipitation time series plot for December is copied at the end of this document.

December started with high pressure and above normal temperatures covering the State. The Central Valley was cool and foggy while higher elevations enjoyed sunshine. The first week ended with a system dropping into the Great Basin generating offshore winds that not only warmed and dried out the State but damaged some areas. Red flag warnings were posted for parts of the State as a result of this event. A strong but dry system centered in Arizona continued to bring winds and threats of fire to the southern part of the State in week two while northern California battled freezing temperatures due to the cold stable air mass that lodged into place. For the second consecutive week, no significant precipitation fell in the State. In week three a cold upper low passed over the southern part of the State bringing heavy rains to some locations. Cold, dry weather continued in the north with more freezes. A fast moving system at the end of the third week brought some showers to the north and another Santa Ana wind event to the south. The month ended with heavy rain to the North Coast but no rain elsewhere. Southern California recorded temperatures in the 80s and no rain.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 91 temperature records tied or broken and 1 precipitation records tied or broken for the month. Of the 91 temperature records set, 33 were for new high maximum temperatures and 43 were for new low minimum temperatures. Records were set over 18 days of the month. South Lake Tahoe tied or set new high temperature records for each day from Christmas to New Year's with the exception of December 28. No rain fell in the month of December at Fresno-Yosemite International Airport. This ties the 1989 record for no rain in December at this location. Bakersfield recorded only a trace of rain in December which has happened 7 times previously since records began in 1889. San Diego tied a 1901 record on December 13th with a low maximum temperature record of 55°F. On this same day Chula Vista tied a 1932 low maximum temperature record with a reading of 54°F. For the year, there were 790 temperature records and 201 precipitation records. Plots of the monthly distribution of records are shown at the end of the document.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 219 stations recorded a minimum temperature below freezing in December while zero stations reached or exceeded 100°F at least once during the month. Statewide extremes from the CDEC network of temperature gages are shown below. Also shown are the monthly average extremes from the CIMIS network. A table of regional average minimum, mean, and maximum temperatures from the CDEC stations is also shown at the end of the summary.

Precipitation in December ranged from dry in the northern two-thirds of the State to below normal for the eastern desert region. For the CDEC precipitation gages for December 2011, the largest amount of precipitation recorded was at Gasquet Ranger Station in the North Coast region with 8.10 inches. This is 49% of the average precipitation for this station for December. At the other end of the spectrum, 48 stations recorded no precipitation for the month. For the CIMIS network, Seeley in Imperial County topped the precipitation charts with 1.86 inches for the month and 13 stations recorded no precipitation. Some CIMIS gages may show large precipitation totals if the gages are not covered during irrigation activities so care should be given to review precipitation data used from this network.

The 8-Station Index for northern California precipitation recorded 0.3 inches in December. On average, 8.9 inches of precipitation is recorded for the 8-Station index in December. Statewide, the average precipitation for October was 12.4% of the long-term average based on the California Data Exchange Center (CDEC) gages. Precipitation percentages by region from the CDEC gages are shown in a table at the end of this document. The 3 inches accumulated in Nov/Dec is the sixth driest Nov/Dec period for the 8 station index. The top 5 driest Nov/December periods were 1957 (1.58 inches), 1977 (1.85), 1987 (2.83), 1960 (2.86), and 1991 (2.95).

CoCoRaHS Update

December 2011 continues California's fourth year with CoCoRaHS – the Community Collaborative Rain, Hail and Snow Network. This group uses citizen volunteers to record rain, hail and snow data. The users enter the data online at the CoCoRaHS web site. The web site provides the opportunity to see spatial detail of rain and snow patterns. A map from December 15, 2011 is shown at the end of the document. As of the end of December 2011, California has 834 volunteers signed up spanning 53 of California's 58 counties. The counties without volunteers are Alpine, Colusa, Glenn, Modoc, and Tuolumne. The county with the most volunteers at the end of December is Sonoma with 91 volunteers. For the month of December, 9,599 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA in December was in Del Norte County where 4.17 inches was recorded on 12/30/11. Twenty-two snowfall reports were recorded with the largest being 4 inches in Riverside County. No hail reports were submitted in December. To join CoCoRaHS or find more information, please visit http://www.cocorahs.org.

Snowpack and Water Supply Conditions

The automated snow sensor network in California showed a statewide average of 2 inches of snow water equivalent for the end of December. This is 20% of average for the date and only 7% of the April 1 average. The Water Supply Index for WY 2011 was wet for the Sacramento Basin and wet for the San Joaquin Basin. Water year 2010 resulted in a below normal category for the Sacramento Basin and above normal category for the San Joaquin Basin for the Water Supply Index. The median initial look at WY2012 indicates that the Sacramento Basin will fall into the below normal category and the San Joaquin will fall into the below normal category. Water supply information for California can be found at http://cdec.water.ca.gov/water_supply.html. A historical listing of water year categories for both basins can be found at http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST.

Drought Monitor and Seasonal Outlook

The maps for California for November 29, 2011 and January 3, 2012 are shown below. The Drought Monitor maps can be found on the National Drought Mitigation Center's (NDMC) website http://drought.unl.edu/dm/. These maps are largely a reflection of precipitation and soil moisture deficit estimates. As of the January 3rd depiction, 46.34% of California is depicted in the D1 or moderate drought category. An additional 23.75% of the state is depicted as D0 or abnormally dry. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for January through March from NOAA depicts California in developing drought throughout most of the state with the far north having a chance for some improvement. This forecast is based primarily on climatology and forecast models. Updates are provided twice per month. Maps and information can be found at http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html.

The California Nevada River Forecast Center developed some drought monitoring tools for California that are now available on CDEC and are automatically updated. These tools look at the frequency associated with precipitation deficits for the Northern Sierra Eight Station Index and the San Joaquin Five Station Index. Another tool looks at the frequency of end-of-month storage for select reservoirs in California. The frequencies of the observations are related to the Drought Monitor's drought categories D0 through D4. The links can be found on the State Climatologist web page and are repeated here:

http://cdec.water.ca.gov/cdecapp/drought/getres.action (California Reservoirs – Drought Status)
http://cdec.water.ca.gov/cdecapp/drought/get8SI.action (Sacramento River Drought Status)
http://cdec.water.ca.gov/cdecapp/drought/get5SI.action (San Joaquin River Status)

For December, the Eight Station Index and the Five Station Index are in drought free conditions for a 12-month and 24 month period largely due to last year's bounty. All reservoirs have above average storage for this time of year.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) is currently in La Niña conditions. Equatorial sea surface temperature anomalies for the tropical Pacific have been mostly negative with values of -1.0°C in the Niño 3.4 at the end of December. The October through December 3-month running mean of the Ocean Niño Index (ONI) is -0.8. This is the second consecutive 3-month period with a value below the threshold of -0.5 for conditions to be classified as a La Niña event. Five consecutive ONI values need to be below the threshold o f -0.5 for conditions to be classified as a La Niña event and five consecutive values above the 0.5 threshold need to be observed for classification as an El Niño event. Most forecast models have the tropical sea surface temperatures returning to ENSO neutral conditions during the spring of 2012. More information can be found at the Climate Prediction Center's web site:
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/
Updates are posted weekly. The latest three month outlook (January through March) from NOAA indicates below normal temperatures for the entire State. For precipitation, below normal conditions are forecast for the central and southern part of the state and equal chances for the northern part of the state. Outlook plots and discussions can be fount at http://www.wrcc.dri.edu/longrang/. General weather information of interest can be found at http://www.noaawatch.gov/. For anomaly information please see http://www.wrcc.dri.edu/anom/cal_anom.html.

Agricultural Data

December 2011 saw the harvesting process wrap up and winter planting continue. The second picking of cotton wrapped up while some late planting of wheat, oats and small grains occurred with the hope of wetter weather. Earlier planted fields were progressing but needed precipitation to sustain growth. Some producers utilized irrigation to improve conditions. Persimmon, kiwifruit, table grape, walnut, and pomegranate, harvests wrapped up. Harvests of pineapple, quince, figs, apples, tangerine, Satsuma mandarin, lemon, and orange harvests continued. Grapevines were dormant and pruning began. Orchard pruning also was underway. While lettuce and pummel harvest picked up, broccoli and carrots continued to be harvested. Strawberry fields were prepped. Rangeland conditions have started to deteriorate due to lack of precipitation. Supplemental feeding continued. For further crop information see http://www.nass.usda.gov/index.asp.

Other Climate Summaries

California Climate Tracker (new product of Western Region Climate Center)
Golden Gate Weather Service Climate Summary
NOAA Monthly State of the Climate Report

Statewide Extremes (CDEC)

High Temperature – 86°F (Clark Training Center, South Coast)
Low Temperature – -22°F* (Casa Vieja Meadows, Tulare)
High Precipitation – 8.10 inches (Gasquet Ranger Station, North Coast)
Low Precipitation – 0.0 inches (48 stations)
*Examination of hourly record indicates that temperature gage stopped at -22°F for several hours on multiple nights. Real temperature may have been colder.

Statewide Extremes (CIMIS)

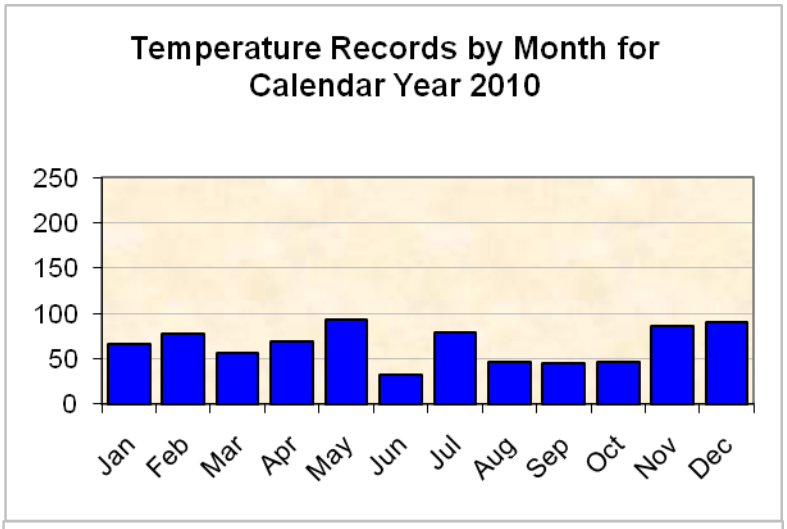
High Average Maximum Temperature – 94.4^0F (Salton Sea East, Imperial County)
Low Average Minimum Temperature – 28.9^0F (Alturas, Modoc County)
High Precipitation – 1.86 inches (Seeley, Imperial County)*
Low Precipitation – 0 inches (13 stations)
*Sometimes irrigation water from sprinklers gets counted as precipitation if the gage is not covered.

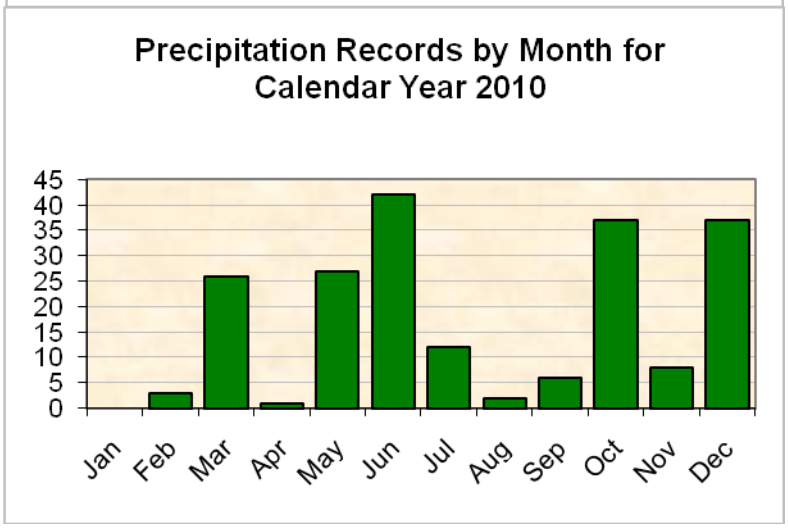
Statewide Precipitation Statistics

Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	Dec	Oct-Dec	Stations	Dec	Oct-Dec	Dec	Oct-Dec
North Coast	0.27	5	5	5	17	13	13	20.6%	52%
SF Bay	0.03	2	2	2	6	5	5	4.0%	44%
Central Coast	0.06	3	3	3	11	8	8	7.4%	62%
South Coast	0.06	3	3	3	14	13	13	35.0%	83%
Sacramento River	0.26	5	5	5	41	31	30	3.5%	38%
San Joaquin River	0.12	6	6	6	24	22	20	2.0%	38%
Tulare Lake	0.07	5	5	5	28	28	28	1.5%	53%
North Lahontan	0.04	3	3	3	13	11	10	6.2%	28%
South Lahontan	0.06	3	3	3	15	14	13	14.4%	50%
Colorado River	0.03	1	1	1	6	5	5	59.6%	64%
Statewide Weighted Average	1	36	36	36	175	150	145	12.4%	48%

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	24	23.0	39.2	61.5
SF Bay	9	35.9	47.6	65.1
Central Coast	12	29.6	46.1	72.3
South Coast	45	31.7	49.2	78.2
Sacramento	82	22.6	39.7	62.2
San Joaquin	47	21.8	37.2	60.2
Tulare Lake	17	13.6	31.6	58.3
North Lahontan	20	7.8	28.9	49.7
South Lahontan	10	13.5	34.1	62.6
Colorado River Desert	8	28.9	49.4	77.3
Statewide Weighted Average	274	22.4	39.4	63.2





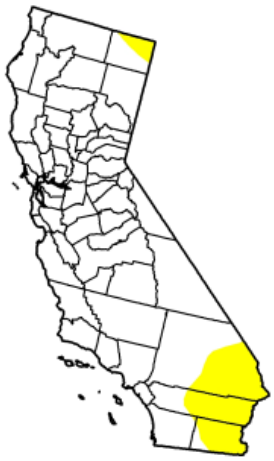
U.S. Drought Monitor

November 29, 2011
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	88.32	11.68	0.00	0.00	0.00	0.00
Last Week (11/22/2011 map)	88.42	11.58	0.00	0.00	0.00	0.00
3 Months Ago (08/30/2011 map)	92.14	7.86	0.00	0.00	0.00	0.00
Start of Calendar Year (12/28/2010 map)	98.62	1.38	0.00	0.00	0.00	0.00
Start of Water Year (09/27/2011 map)	89.14	10.86	0.00	0.00	0.00	0.00
One Year Ago (11/23/2010 map)	90.14	9.86	2.41	0.00	0.00	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu

Released Thursday, December 1, 2011
David Miskus, NOAA/NWS/NCEP/Climate Prediction Center

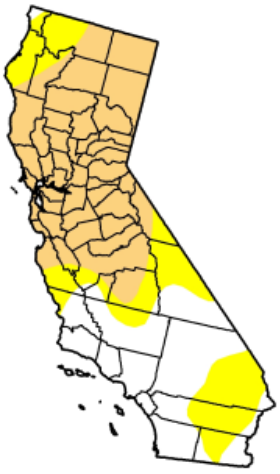
U.S. Drought Monitor

January 3, 2012
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	29.91	70.09	46.34	0.00	0.00	0.00
Last Week (12/27/2011 map)	33.91	66.09	5.41	0.00	0.00	0.00
3 Months Ago (10/04/2011 map)	89.25	10.75	0.00	0.00	0.00	0.00
Start of Calendar Year (12/27/2011 map)	33.91	66.09	5.41	0.00	0.00	0.00
Start of Water Year (09/27/2011 map)	89.14	10.86	0.00	0.00	0.00	0.00
One Year Ago (12/28/2010 map)	98.62	1.38	0.00	0.00	0.00	0.00



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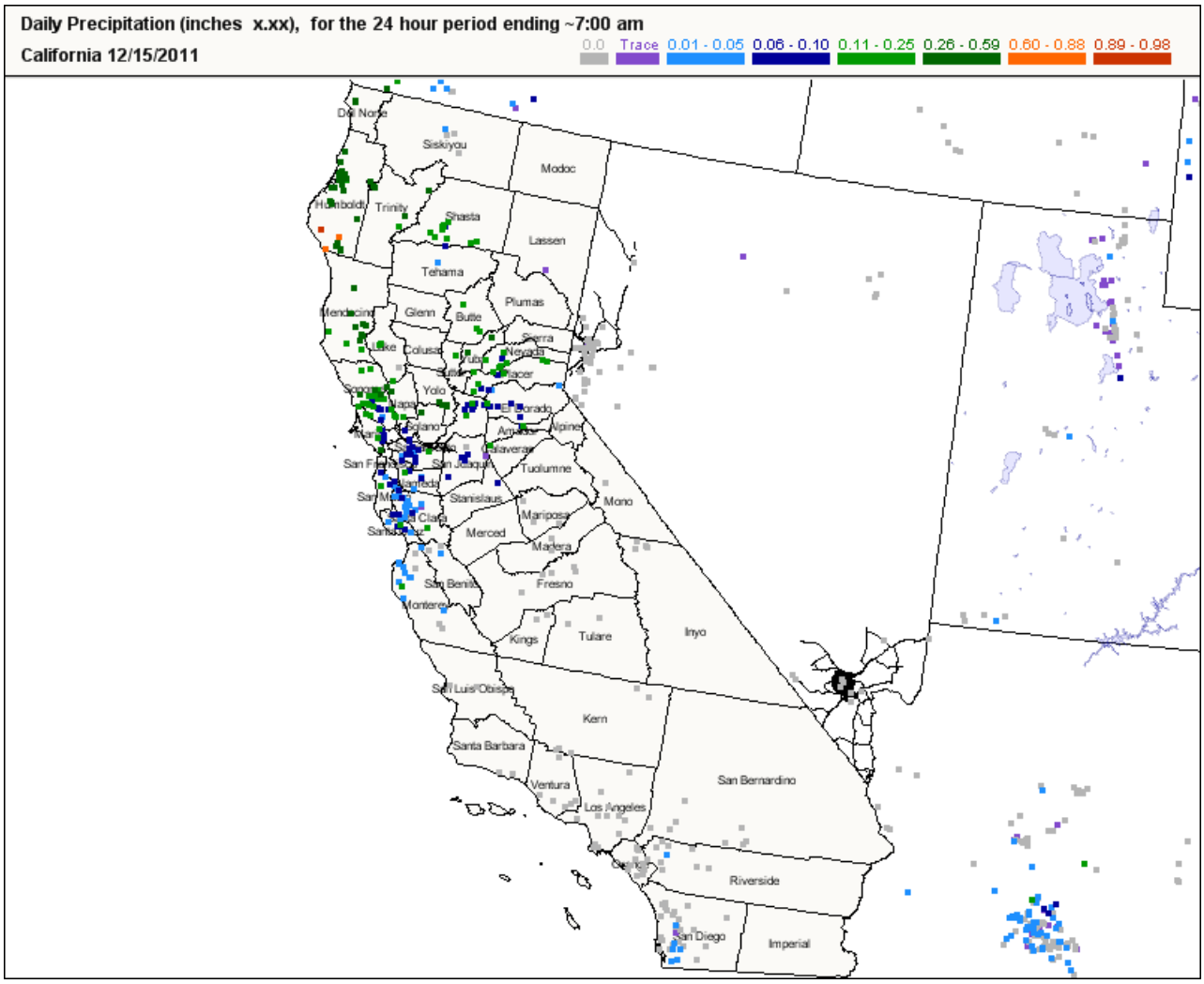
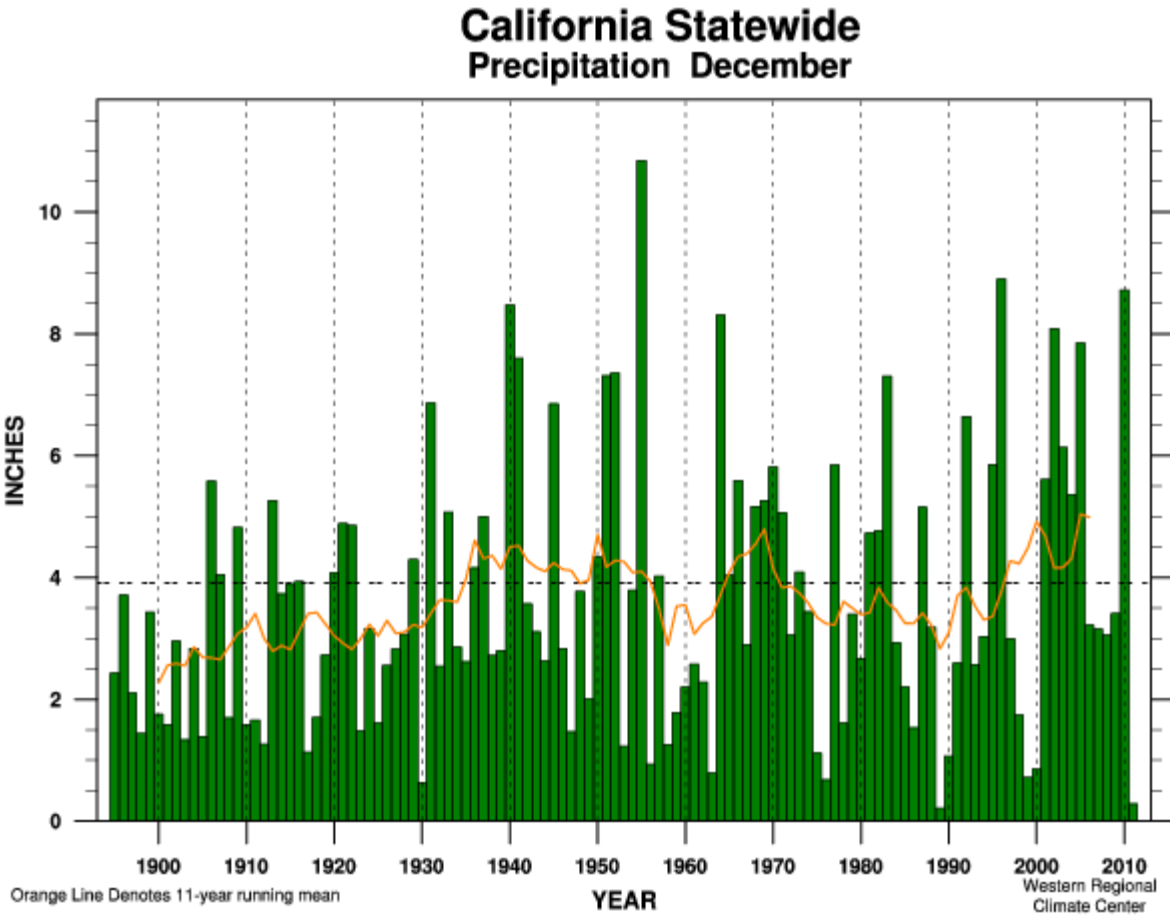
http://droughtmonitor.unl.edu

Released Thursday, January 5, 2012
Brad Rippey, U.S. Department of Agriculture


Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am
California 12/15/2011
0.0
Trace
0.01 - 0.05
0.06 - 0.10
0.11 - 0.25
0.26 - 0.59
0.60 - 0.88
0.89 - 0.98
Del Norte
Siskiyou
Modoc
Humboldt
Trinity
Shasta
Lassen
Tehama
Plumas
Mendocino
Glenn
Butte
Sierra
Lake
Colusa
Nevada
Placer
Yolo
El Dorado
Solano
Alpine
Napa
Amador
Calaveras
San Francisco
San Joaquin
Tuolumne
Marin
Stanislaus
Mono
Contra Costa
Mariposa
Alameda
Merced
Madera
San Benito
Fresno
Monterey
Kings
Tulare
Inyo
San Luis Obispo
Kern
Santa Barbara
San Bernardino
Ventura
Los Angeles
Orange
Riverside
San Diego
Imperial



Linear Trend 1895-present	+ 1.18 ± 1.15 in.	(+ 30 ± 29%) per 100 yr	
Linear Trend 1949-present	+ 0.35 ± 3.43 in.	(+ 8 ± 87%) per 100 yr	
Linear Trend 1975-present	+ 5.04 ± 7.65 in.	(+128 ± 195%) per 100 yr	
Wettest Year	10.85 in. (277%)	in 1955	MEAN 3.91 in.
Driest Year	0.22 in. (5%)	in 1989	STDEV 2.45 in.
December 2011	0.28 in. (7%)		RANK 2 of 117